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On the Lymphatic System of the Common Rat

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THE THEORY OF BINAURAL BEATS—AN EXPERIMENTAL CONTRIBUTION.

G. W. STEWART AND HAROLD STILES.

(ABSTRACT.)

The experiments here reported were performed in order to secure evidence concerning the cause of the additional maxima which occur in binaural beats. (See G. W. Stewart, Physical Review, Series 2, 3, p. 146, 1914, for a description of the phenomena.) These additional maxima occur at certain phase differences, and the change in these phase differences should depend upon the frequency of the tones, but not upon the frequency of the beats. If the additional maxima are caused by interaural conduction then, as it can be shown, the phase differences should vary as the frequencies. In the accompanying curve the phase differences, shown as fractions of π, are the ordinates and the frequencies, abscissae. Instead of a straight line which should obtain in the case of interaural conduction, we have a curve which is far from a straight line. (See Plate III.) The numbers in parentheses indicate the number of observations used in obtaining the position of the point. Five frequencies were used.

After much consideration of theories involving interaural conduction, none seems to be in agreement with the evidence here shown.

PHYSICS LABORATORIES,
STATE UNIVERSITY OF IOWA.

ON THE LYMPHATIC SYSTEM OF THE COMMON RAT.

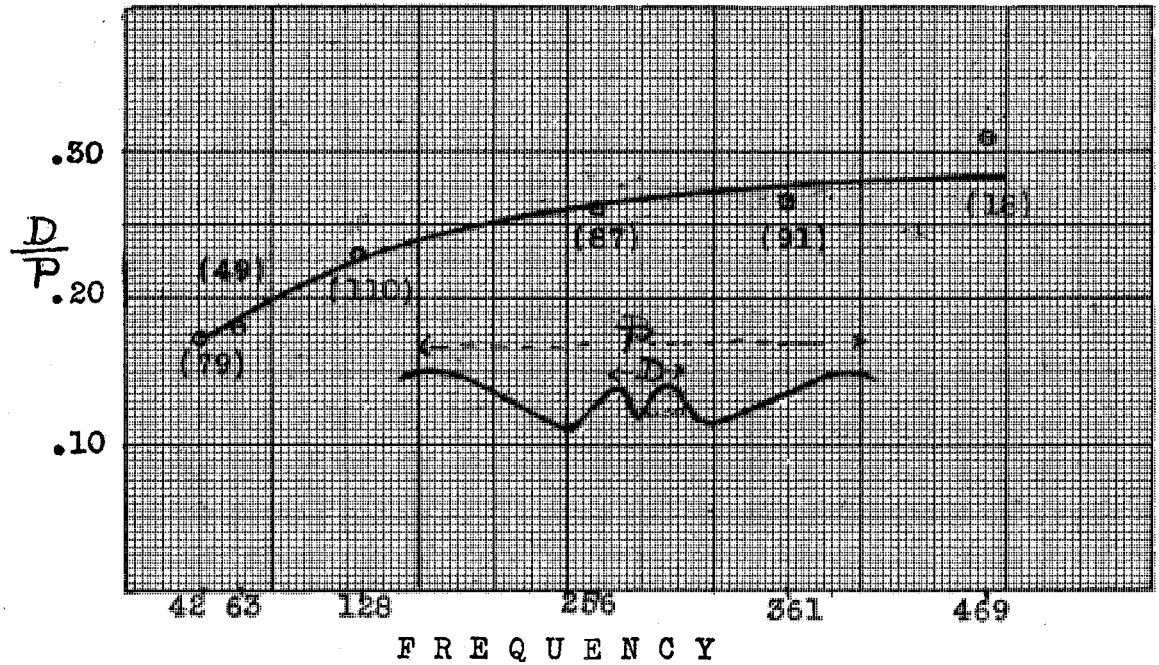
(Epimyus norvegicus)

THESLE T. JOB.

(ABSTRACT.)

From fifty injected specimens, the gross anatomy of the Common Rat has been studied and outlined. The results of the work have further proven the studies of McClure and Silvester on the Lymphatico-venous communications in the Jugulo-subclavian district, and of Silvester on the renal vein communica-

PLATE III.



Displacement of Secondary Maxima with Variation in Frequency.

tions, and have established two additional communications, the portal vein connection and the ilio-lumbar vein connection. The main circulation and disposition of the lymphatic system has been determined and the need of further knowledge concerning the histology of the lymph nodes, of which there appear to be two types, is pointed out.

LABORATORIES OF ANIMAL BIOLOGY,
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LEACHING OF THE PLEISTOCENE DRIFTS OF EASTERN IOWA.

MORRIS M. LEIGHTON.

(ABSTRACT)

The term leaching is applied by glaciologists to that process of dissolving and carrying out in solution by ground water the soluble constituents of the drift, of which lime carbonate is the most notable in the Mississippi Valley. This discussion of that phenomenon is based on observations made by the writer on Pleistocene deposits of the larger part of the east half of Iowa, and in the vicinity of Chicago, Illinois. Briefly, the evidence warrants the following contentions: (1) The percolation of meteoric waters through clayey drifts is so slow that they become saturated within a few inches after the calcareous zone is encountered. The zone of notable solution is, therefore, limited to a narrow transition zone. (2) The leaching of the drift takes place by the gradual descension of this solution zone. (3) The rate of descension is probably greatest from the surface down to the horizon of the "ground-water surface for wet seasons," less rapid from this horizon down to the so-called permanent ground-water surface, and markedly checked at the latter horizon. (4) The bottom of the leached zone in young drifts may, therefore, not mark the horizon of permanent ground-water surface. (5) the stratigraphic horizon and topographic position of outcrops must be considered in quoting figures for the amount of leaching of a drift sheet. Other important factors are the amount of annual percolation of ground water, the general texture of materials, the size and relative quantity of calcareous constituents, and the amount of carbonaceous materials in the soil. (6) The factor of the rise of ground water into the leached